REMARKS

Applicants respectfully request consideration of the subject application as amended herein. This Amendment is submitted in response to the Office Action mailed November 2, 2005. Claims 1-24 have been withdrawn. Claims 25-57 are rejected. In this Amendment, Claims 25, 29, and 35 have been amended. Claim 42 has been canceled without prejudice.

Restriction

Applicants appreciate the Examiner's indication that the July 12, 2005 restriction requirement has been withdrawn.

Claim Objection

The Examiner has objected to claim 42 under 37 CFR 1.75(c) as being improper dependent form for failing to further limit the subject matter of a previous claim. Claim 42 has been canceled without prejudice.

35 U.S.C. § 112, first paragraph

The Examiner has rejected claim 57 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

Applicants respectfully disagree and submit that claim 57 comply with § 112, first paragraph, and therefore request withdrawal of this rejection.

As previously discussed, that at least Figures 17B-17C illustrate small and sharp (291) used to create and/or enhance the electrical and mechanical connection between the first and second conductors 140 and 240. See also Applicant's Specification at [076]. Additionally, at

[080], it is stated that the first conductor can be coupled to the second conductor directly without conductive medium (e.g., can be seen in Figure 17B) and mechanical bonding techniques can be used to create such the connection. Further, rivet, rod, staple or wire can be the use for such mechanical bonding. Therefore, the particles 291 of Figure 17B can be used to illustrate such rivet, rod, staple or wire, in some embodiments. Additionally, these components are well known in the art as to what they look like and how to use them. Thus, claim 57 is sufficiently enabled by the disclosure in the Specification and drawings.

Rejections under 35 U.S.C. § 102(e)

The Examiner has rejected claims 25 and 26 under 35 U.S.C. §102(e) as being anticipated by Zafrany, (U.S. Patent No. 6,677,186, hereinafter "Zafrany"). For the reasons discussed below, Applicants submit that claims 25-26 are patentable over the above Zafrany.

Zafrany taught a conductor for a chip embedded in a substrate and said conductor is to "penetrate" the antenna thickness. There is no such physical penetration for the first conductor to establish electrical connection with the second conductor. The first and second conductors can be electrically connected by just contact or near proximity. Further, the amended claim 25 recites that the "first conductor is formed on top of the first substrate." The protrusions in Zafrany is on the chip itself and may have no part being on the top substrate. This appeared to be desirable in Zafrany since Zafrany taught to have the protrusion embedding into the antenna layer.

In Zafrany, the protrusions 12 are formed so that they can penetrate the thickness and the layer of the antenna. Further, Zafrany preferred the protrusions 12 being formed on the contact pads of the chip (Zafrany, col. 4, lines 7-17). Zafrany attempted to deal with the fragility of the protrusions on the chip (contact pads) (Zafrany, col. 1, lines 50-57). Thus,

Zafrany taught the protrusions to be "embedded" into the thickness of the antenna layer when the device is assembled.

Therefore, for the reasons above, Applicants respectfully submit that Zafrany does not anticipate claims 25 and 26.

Rejections under 35 U.S.C. § 103(a)

The Examiner has rejected claims 27 under 35 U.S.C. §103(a) as being unpatentable over Zafrany as applied to claim 25, and further in combination with Neuahus, (US Patent No.: 6,853,087, hereinafter "Neuahus"). For the reasons discussed below, Applicants submit that claim 27 is patentable over the above Zafrany and Neuahus combined.

As previously discussed, Zafrany taught a conductor for a chip embedded in a substrate and said conductor is to "penetrate" the antenna thickness. The first and second conductors can be electrically connected by just contact or near proximity. Further, the claim 27 recites that the "first conductor is formed on top of the first substrate." The protrusions in Zafrany are on the chip itself and may have no part being on the top substrate. This appeared to be desirable in Zafrany since Zafrany taught to have the protrusion embedding into the antenna layer.

In Zafrany, the protrusions 12 are formed so that they can penetrate the thickness and the layer of the antenna. Further, Zafrany preferred the protrusions 12 being formed on the contact pads of the chip (Zafrany, col. 4, lines 7-17). Zafrany attempted to deal with the fragility of the protrusions on the chip (contact pads) (Zafrany, col. 1, lines 50-57). Thus, Zafrany taught the protrusions to be "embedded" into the thickness of the antenna layer when the device is assembled.

Combining Zafrany to Neuahus would have not provided the elements of claim 27.

Additionally, from Zafrany, because, the protrusions penetrate into the antenna layer, one would have not combined Neuahus to Zafrany where particles are used on contact pads to provide bonding. The conductive protrusions in Zafrany would have embedded into the antenna layer according to Zafrany and as such there would be no need to turn to Neuahus for the use of the particles. Further, Neuahus pertained more to a flip chip technology where the contact pads are connecting to another conductive member without features similar to the protrusions or conductive medium. Since combining Zafrany to Neuahus would have not provided the elements of claim 27 and the desire for such combination appeared to be lacking, Applicants respectfully submit that claim 27 is not obvious in light of Zafrany and Neuahus.

Claim 28 is rejected under 35 U.S.C. §103(a) as being unpatentable over Zafrany as applied to claim 25, and further in combination with Chang (US Patent Application 2003/0232174, hereinafter "Chang"). For the reasons discussed below, Applicants submit that claim 28 is patentable over the above Zafrany and Chang combined.

As discussed, Zafrany taught a conductor for a chip embedded in a substrate and said conductor is to "penetrate" the antenna thickness. The first and second conductors can be electrically connected by just contact or near proximity. Further, claim 28 recites that the "first conductor is formed on top of the first substrate." The protrusions in Zafrany are on the chip itself and may have no part being on the top substrate. This appeared to be desirable in Zafrany since Zafrany taught to have the protrusion embedding into the antenna layer.

Thus, even if Chang taught the use of a fluid self assembly, combining Chang to Zafrany would have not provided the elements of claim 28. Thus, Applicants respectfully submit that claim 28 is not obvious in light of Zafrany and Chang.

Claims 29, 30, 32, 35-40, and 45-47 are rejected under 35 U.S.C. §103(a) as being

unpatentable over the combination of Zafrany and Zandman (US Patent Application 2001/0000631, hereinafter "Zandman"). For the reasons discussed below, Applicants submit that claim 28 is patentable over the above Zafrany and Zandman combined.

As discussed, Zafrany taught a conductor for a chip embedded in a substrate and said conductor is to "penetrate" the antenna thickness. In claims 29, 30, 32, 35-40, the first and second conductors can be electrically connected by just contact or near proximity. Further, Further, claims 29, 30, 32, 35-40 also have the "first conductor is formed on top of the first substrate." The protrusions in Zafrany are on the chip itself and may have no part being on the top substrate. This appeared to be desirable in Zafrany since Zafrany taught to have the protrusion embedding into the antenna layer.

Thus, even if Zandman taught the use of a conductive polymer conductor made of a thermoplastic or thermosetting material, combining Zandman to Zafrany would have not provided the elements of the present claims.

Further, Zafrany did not teach that the first conductor is attached to the chip by screen printing, flatbed and rotary screen printing, stencil printing, ink jet printing, gravure printing, flexographic printing, pad stamping, electrostatic printing, dispensing through a needle and pipette, laminating, hot pressing, laser assisted chemical vapor deposition, physical vapor deposition, shadow masking, evaporating, extraction coating, curtain coating, or electroplating. As previously discussed, Zafrany taught protrusions 12 and there was no teaching of how protrusions 12 are formed on the contact pads of the chip. Thus, Applicants respectfully submit that Zafrany did not teach this particular element. Particularly, Zafrany and Chang combined could have not made obvious claim 32.

Thus, Applicants respectfully submit that claims 29, 30, 32, 35-40, and 45-47 are not obvious in light of Zafrany and Zandman.

Claim 31 is rejected under rejected under 35 U.S.C. §103(a) as being unpatentable over Zafrany and Zandman as applied to claim 29, and further in combination with Chang. For the reasons discussed below, Applicants submit that claim 31 is patentable over the above Zafrany, Zandman, and Chang combined.

As discussed, Zafrany taught a conductor for a chip embedded in a substrate and said conductor is to "penetrate" the antenna thickness. Claim 31 also has the "first conductor is formed on top of the first substrate." The protrusions in Zafrany are on the chip itself and may have no part being on the top substrate. This appeared to be desirable in Zafrany since Zafrany taught to have the protrusion embedding into the antenna layer.

Thus, even if Chang taught the use of a fluid self assembly, combining Chang to Zafrany would have not provided the elements of claim 31. Thus, Applicants respectfully submit that claim 31 is not obvious in light of Zafrany, Zandman, and Chang.

Claims 33, 34, 41, 42, 44 and 48-56 are rejected under 35 U.S.C. §103(a) as being unpatentable over Zafrany and Zandman as applied to claims 29 and 35, and further in combination with Neuhaus. For the reasons discussed below, Applicants submit that these present claims are patentable over the above Zafrany, Zandman, and Neuahus combined.

As previously discussed, Zafrany taught a conductor for a chip embedded in a substrate and said conductor is to "penetrate" the antenna thickness. These pending claims also have the "first conductor is formed on top of the first substrate." The protrusions in Zafrany are on the chip itself and may have no part being on the top substrate. This appeared to be desirable in Zafrany since Zafrany taught to have the protrusion embedding into the antenna layer.

In Zafrany, the protrusions 12 are formed so that they can penetrate the thickness and the layer of the antenna. Further, Zafrany preferred the protrusions 12 being formed on the

contact pads of the chip (Zafrany, col. 4, lines 7-17). Zafrany attempted to deal with the fragility of the protrusions on the chip (contact pads) (Zafrany, col. 1, lines 50-57). Thus, Zafrany taught the protrusions to be "embedded" into the thickness of the antenna layer when the device is assembled.

Combining Zafrany to Neuahus would have not provided the elements of claim 27. Additionally, from Zafrany, because, the protrusions penetrate into the antenna layer, one would have not combined Neuahus to Zafrany where particles are used on contact pads to provide bonding. The conductive protrusions in Zafrany would have embedded into the antenna layer according to Zafrany and as such there would be no need to turn to Neuahus for the use of the particles. Further, Neuahus pertained more to a flip chip technology where the contact pads are connecting to another conductive member without features similar to the protrusions or conductive medium. Since combining Zafrany to Neuahus would have not provided the elements of the claims and the desire for such combination appeared to be lacking, Applicants respectfully submit that the present claims are not obvious in light of Zafrany and Neuahus.

Further, even if Zandman taught the use of a conductive polymer conductor made of a thermoplastic or thermosetting material, combining Zandman to Zafrany and Neuahus would have not provided the elements of the present claims.

Additionally, Neuahus did not teach a conductive medium between the first conductor and the second conductor as recited in the claims. In the claims, the chip is embedded within the first substrate. The first conductor is formed on top of the first substrate. The conductive medium is formed on the first conductor. And the conductive medium is then attached to the second conductor formed on the second substrate. None of the Zafrany, Zandman, and Neuahus references taught such a configuration.

Additionally, Neuahus did not teach thermosonic bonding and thermocompression bonding as the Examiner might have thought. Both processes involve heating up the substrate, using ultrasonic energy or vibration, or pressure to bring conductive materials to fuse with one another. No such processes were taught in Neuahus.

Thus, combining Zafrany, Zandman, and Neuahus would have not provided the elements of claims 33, 34, 41, 42, 44 and 48-56 to make these claims obvious.

Claims 35 and 41-43 are rejected under 35 U.S.C. §103(a) as being unpatentable over Karpman (US Patent No.: 6,448,109, hereinafter "Karpman") and Chang. For the reasons discussed below, Applicants submit that these present claims are patentable over the above Karpman and Chang combined.

Applicants respectfully disagree that Chang inherently disclosed the use of the first conductor for a "composite bump" and as such inherently being made of a thermosetting or a thermoplastic material. In Chang, the composite bump is a metal composite. There is no teaching of thermosetting or thermoplastic material. Thermosetting material contains conductive fillers that are intrinsically conducting polymers dispersed in a thermosetting polymer or thermoplastic polymer. When deposited, the thermosetting material or the thermoplastic material is deposited as a soft polymer and cured and solidified to form the conductor. (See also Applicant's Specification [050]-[052].

On the other hand, the composite bump in Chang is a composite of metals. No mixture of polymers was disclosed in Chang. Thus, combining Karpman and Chang would have not provided the elements of claims 35 and 41-43 to make these claims obvious.

If the Examiner determines the prompt allowance of these claims could be facilitated by a telephone conference, the Examiner is invited to contact Mimi Dao at (408) 720-8300.

Deposit Account Authorization

Authorization is hereby given to charge our Deposit Account No. 02-2666 for any charges that may be due. Furthermore, if an extension is required, then Applicant hereby requests such extension.

Respectfully submitted,

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Dated: February 2, 2006

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